

CLAIMS:

1. Apparatus for suspending a vibratory element from a support which is relatively stationary with respect to the vibratory element, the apparatus including a first member having first and second ends, the first end of the first member coupled to the support and the second end of the first member depending downwardly from the first end of the first member, a second member coupled to the vibratory element for movement relative to the first member as the vibratory element moves, and a tension spring having a first end and a second end, the first end of the tension spring coupled to the first member and the second end of the tension spring coupled to the second member.

5 2. The apparatus of claim 1 wherein the first member comprises a rod including an attachment point, the first end of the tension spring received at the attachment point.

10 3. The apparatus of claim 2 wherein the attachment point comprises a passageway through first member, the tension spring including an end configured for engagement in the passageway.

15 4. The apparatus of claim 1 wherein the vibratory element comprises a tub for processing a payload, a drive for rotating the tub about a rotary axis of the tub, and a support upon which the tub is mounted for rotation by the drive.

20 5. The apparatus of claim 4 wherein the support includes an opening for receiving the second member to couple to the vibratory element for movement relative to the first member as the vibratory element moves.

25 6. The apparatus of claim 5 wherein the second member comprises a passageway for receiving the first member.

7. The apparatus of claim 5 wherein the second member includes a bearing surface.

8. The apparatus of claim 7 wherein the bearing surface comprises a surface of rotation of a plane curve.

30 9. The apparatus of claim 8 wherein the bearing surface is part spherical.

10. The apparatus of claim 5 wherein the tension spring comprises a helical coil spring and the second member comprises a threaded portion, the threads of which are sized to threadedly engage coils of the tension spring to couple the tension spring to the second member.

5 11. The apparatus of claim 1 further comprising a dampening element coupled to the first member between the second member and the second end of first member.

10 12. The apparatus of claim 11 wherein the first end of the tension spring is coupled to the first member between the second member and the first end of the first member.

13. The apparatus of claim 12 wherein the dampening element comprises damper constructed from an elastomeric material.

14. The apparatus of claim 12 wherein the dampening element comprises a fluid damper.

15 15. The apparatus of claim 1 wherein the second member comprises a dampening element for exerting a force on the first member as the vibratory element moves.

20 16. The apparatus of claim 15 wherein the support includes an opening for receiving the second member to couple to the vibratory element for movement relative to the first member as the vibratory element moves, the second member includes a first end relatively closer to the first end of the first member and a second end relatively closer to the second end of the first member, the second member further comprises a passageway for receiving the first member, a bearing surface, and a slot extending longitudinally of the first member from the second end of the second member toward the first end of the second member and intersecting the passageway, the second member being resilient so that the region of the second member including the slot flexes as the vibratory element moves against the bearing surface to vary the frictional engagement of the sidewall of the passageway against the first member.

25 17. The apparatus of claim 16 wherein the second member includes two slots opposed across the passageway.

30 18. The apparatus of claim 16 wherein the first bearing surface is complementarily configured to an adjacent second bearing surface of the vibratory element.

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19. The apparatus of claim 18 wherein the support includes an opening for receiving the second member to permit bearing engagement of the first and second bearing surfaces.

20. The apparatus of claim 16 wherein the first member comprises
5 a rod.